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Government of Saskatchewan

Annual Report 1981-82

Saskatchewan Mineral Resources

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Saskatchewan Mineral Resources

for the fiscal year ending
March 31, 1982

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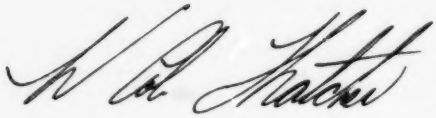
Transmittals

The Honorable C. Irwin McIntosh
Lieutenant-Governor
Province of Saskatchewan

Dear Sir:

I have the honor to submit herewith the Annual Report of Saskatchewan Mineral Resources for the fiscal year ending March 31, 1982.

Respectfully submitted,



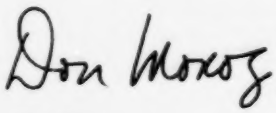
W. Colin Thatcher
Minister
Saskatchewan Energy and Mines

W. Colin Thatcher
Minister of Energy and Mines
Province of Saskatchewan

Sir:

I have the honor to submit, for your consideration the Annual Report of Saskatchewan Mineral Resources for the fiscal year ending March 31, 1982.

Respectfully submitted,



Don Moroz
Deputy Minister
Saskatchewan Energy and Mines

Deputy Minister's Introduction

For Saskatchewan Mineral Resources, the combined effects of federal energy policies, falling resource markets, and an emerging world-wide recession were obvious over the course of the 1981-82 fiscal year.

In the oil and natural gas sector, the year began under the federal government's National Energy Program (NEP). Restrictive prices and burdensome taxes translated into greatly reduced levels of industry activity. During the calendar year 1981, only 808 wells were drilled, compared to the record of 1,498 wells established in 1980. Drilling licenses fell from the record number of 1,626 established in 1980 to only 791 to 1981.

Saskatchewan's oil producers faced continuing marketing difficulties in 1981. During its negotiations with the federal government over the NEP, the Alberta government twice reduced its production of light oil — first by 60,000 barrels per day and later by 120,000 barrels per day. An immediate consequence of these actions was that Saskatchewan's producers of light sour oil in the Estevan area were forced to cut back production, since this oil must be blended with Alberta's sweeter crudes to make it acceptable to eastern Canadian refineries.

In addition, as Alberta cut back its production, eastern refiners sought and were successful in obtaining new off-shore contracts for imported oil. These contracts limited the extent to which western Canadian production could be brought up to capacity once the federal-provincial differences were resolved.

In other instances, producers chose to cut back production to limit their losses in the face of the much higher tax levels brought about by the NEP.

These factors, taken together, resulted in a total crude oil output for 1981 of 7.39 million cubic metres (46.5 million barrels) compared to 9.33 million cubic metres (58.7 million barrels) in 1980.

Once the Alberta and federal governments had resolved their differences on oil pricing and taxation, Saskatchewan was able to negotiate an agreement with Ottawa. The agreement, signed on October 26, provided details on pricing, royalties and taxes, and revenue sharing, for the period 1981-86. It resolved the constitutional issue of the application of federal oil and gas taxes as they apply to Saskatchewan's Crown corporations so that the principles put forth by both governments were protected.

The agreement also contained a number of provisions to encourage the development of Saskatchewan's heavy oil resources.

But the Canada-Saskatchewan Agreement was not able to rectify the problems faced by the oil industry. Falling Canadian demand for refined petroleum products, stemming both from greater conservation efforts and the recession that was gripping the country, meant that producers continued to experience marketing problems through the end of the fiscal year. In addition, high interest rates, the unavailability of capital, and falling world prices meant that producers either could not or would not make the investments necessary to revitalize the industry in western Canada.

At the end of the fiscal year, the department was continuing its efforts, in concert with other governments and the industry, to find workable solutions to these problems.

As with oil, world market conditions and the general economic recession had an adverse effect on the potash industry in 1981-82. In the off-shore markets, particularly Brazil, a lack of foreign exchange resulted in a severe reduction in purchases of potash from Canada. In the United States market, high interest rates and falling commodity prices meant that farmers made significant cuts in their fertilizer requirements.

As a consequence of these developments, potash prices began to fall during 1981-82, from a peak of $167.19 per K_2O tonne in May, 1981, to $142.98 per K_2O tonne in March, 1982.

Saskatchewan's potash sales fell from 7.1 million K_2O tonnes in 1980 to 6.4 million K_2O tonnes in 1981. Overall government revenues from potash declined from $280.3 million in 1980-81 to $185 million in 1981-82.

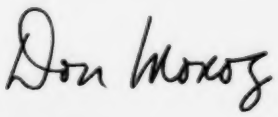
In uranium, the most dramatic development in 1981-82 was the announcement by Eldorado Nuclear that it would close its mining operations at Uranium City effective June 30, 1982. Eldorado found that its underground mining operation, the last in existence in Saskatchewan, was no longer viable given soft world prices for uranium and deteriorating ore grades.

Other uranium producers fared better than Eldorado in 1981-82. Despite the continuing weakness in uranium prices, Saskatchewan's low-cost strip mining operations remained economically viable. Overall, government revenues from uranium increased from $15.0 million in 1980-81 to $29.9 million in 1981-82, due in large part to the success of the Cluff Lake mine attaining its first full year of production.

The department continued its efforts in 1981-82 toward the development of a comprehensive energy policy for Saskatchewan. It published a document entitled "Energy Saskatchewan: The Situation Today" to facilitate public discussion of the issues which should be dealt with by a new policy. The document outlines the history of energy production and consumption in Saskatchewan and offers some insight on the province's energy future.

I was appointed Deputy Minister of Saskatchewan Mineral Resources effective August 27, 1981. I came to the department at a time when our major resource industries — oil and potash — were facing numerous problems. Although not all of these difficulties have been overcome, I believe we have taken very positive steps along the road to recovery. For these successes, I must thank the staff of Saskatchewan Mineral Resources — for their professionalism, their dedication, and their support.

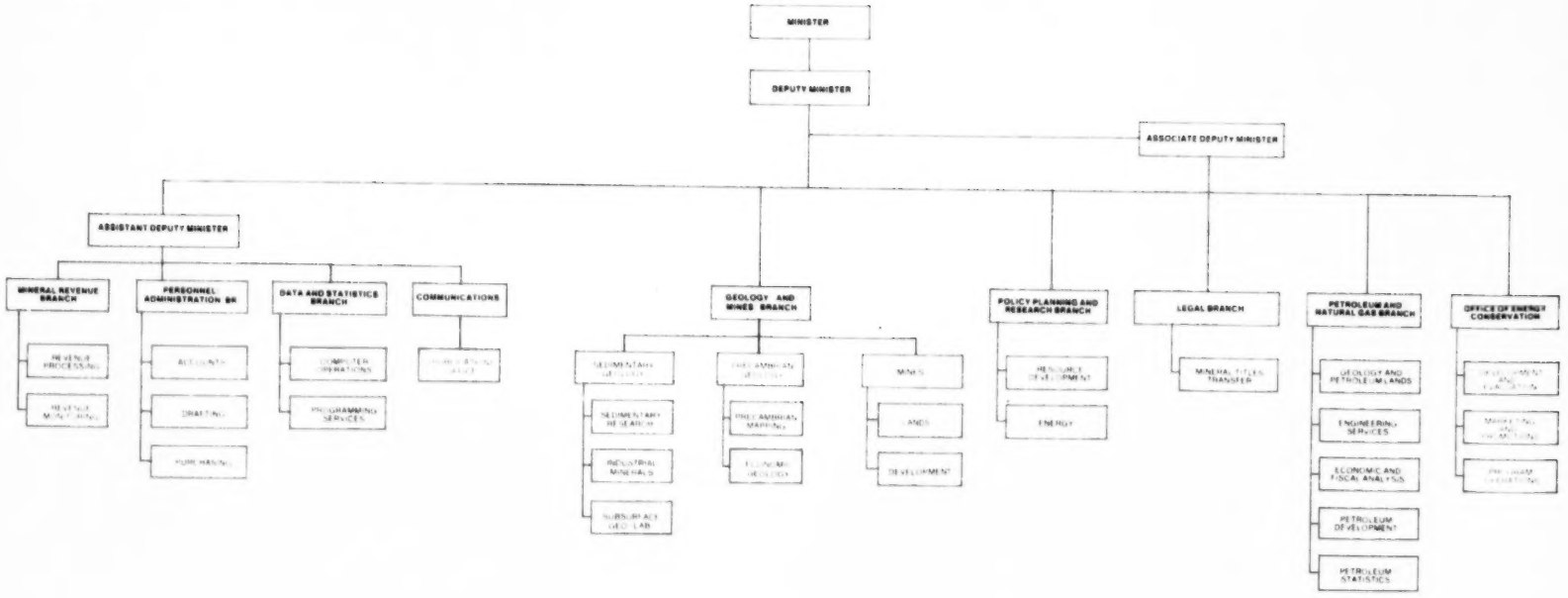
Respectfully submitted,



Don Moroz
Deputy Minister
Saskatchewan Energy and Mines

Organization Chart

Saskatchewan
Mineral Resources



March 1982

Mineral Revenue Branch

The Mineral Revenue Branch is responsible for collecting, recording and accounting for the various resource revenues owing to the province. The branch:

- ensures that revenues and accompanying returns and reports are received when due;
- assesses certain kinds of resources revenues on an annual or periodic basis;
- assesses interest and/or penalties on late payments and overdue returns;
- processes revenues through computer and manual systems, as input to financial and management information reports;
- audits resource companies to ensure compliance with taxing legislations;
- maintains historical records of all resource revenues received by the department;
- prepares special reports for use by department officials;
- informs the resource industry of its responsibilities under exisitng legislation and changes thereto;
- maintains close liaison with other branches of the department on revenue matters.

This branch is divided into two divisions; revenue processing and revenue monitoring. Revenue processing is responsible for maintenance of the tax roll, receiving and recording of revenue, maintenance of computer systems and their interface with other department and government systems, and processing and payment of incentive grants and compensation payments.

Revenue monitoring is responsible for office and field audits in all resource revenue areas, follow-up of delinquent returns, collection of accounts receivable and informing taxpayers of resource taxation legislation.

The main objectives of the branch are to ensure that resource revenues owing to the province are received when due, that the amounts paid are correct and properly accounted for, and that data are available on a regular and accurate basis for preparation of financial reports. To attain these objectives, the branch is committed to a continuous program of review and improvement to existing systems and procedures or to the development of new systems.

Other objectives include continued and improved communication with taxpayers and the resource industry, greater involvement in policy decisions affecting resource revenues, and training and upgrading of staff to improve the branch's efficiency. Specifically, staff in the revenue monitoring section will be expanding the field audit activity in the oil well income tax area and will be stressing the refinement of audit programs and training of audit staff by having each auditor familiar with all resource revenue areas.

Legislation

The Mineral Revenue Branch administers numerous acts, regulations and agreements. Among the more significant are:

The Mineral Resources Act

The Petroleum and Natural Gas Regulation, 1969

The Oil and Gas Incentive Regulations

The Mineral Dispositions Regulations, 1961, including Uranium Royalties

The Delayed Payment Charge Regulations, 1970.

The Oil Well Income Tax Act and Regulations

The Mineral Taxation Act

The Freehold Coal Tax Regulations

Regulations pertaining to Mineral Acreage Tax and Producing Tract Tax

The Oil and Gas Conservation, Stabilization and Development Act

The Potash Resource Payment Agreement

Revenues

The rapid increase in resource revenues, which began in 1977-78, slowed during the past year. Total revenue during 1981-82 amounted to $763.4 million, a decrease of $30 million over 1980-81.

Source of Revenue	1981-82	1980-81	Per Cent Increase (Per Cent Decrease)
Heritage Fund			
Oil and Gas	$533,383,493	$483,401,028	10.3
Potash	184,999,778	280,263,502	(34.0)
Uranium	29,932,970	15,015,016	99.4
Other Minerals	10,367,331	8,903,910	16.4
Total	**$758,683,572**	**$787,583,456**	
Consolidated Fund			
Mineral Land Tax	$3,755,264	$3,811,617	(1.5)
Interest and Penalty Charges	3,776	41,595	(90.9)
Sales, Service, etc.	185,149	140,482	31.8
Receipts from other Governments	764,443	1,787,021	(57.2)
Total	**$4,708,632**	**$5,780,715**	

Incentives and Compensations

Payments under The Oil and Gas Incentive Regulations levelled off during the year to $60.2 million in 1981-82 compared with the $60.5 million in 1980-81.

Compensation payments to former mineral owners declined from $3.0 million in 1980-81 to $1.9 million in 1981-82.

Number of Accounts

The number of client/taxpayer accounts handled by the Mineral Revenue Branch is approximately 17,400.

Number of Accounts	Type of Account	Reporting Frequency
6,400	Operator Statements	Month
124	Net Royalties	Month
1,350	Producing Tract Tax	Annual
5,500	P & NG Lease Rentals	Annual
775	Oil Well Income Tax	Annual
25	Potash	Month/Quarter/ Annual
45	Uranium and Sodium Sulphate	Month/Quarter/ Annual
940	Coal	Month/Quarter/ Annual
1,235	Quarrying	Month/Quarter/ Annual
70	Salt and Other Minerals	Month/Quarter/ Annual
900	Mineral Land Tax	Annual
50	Miscellaneous Sales	Month

Personnel and Administration Branch

This branch manages the administrative services for the department and its staff. Specific services include personnel, accounts, purchasing, drafting and budget administration.

Personnel

This division is responsible for recruitment and selection of department staff, training, organizational development, classification, affirmative action and advisory services regarding the rights and benefits of employees.

Accounts

The staff in this division process all department expenditures including payrolls, expense accounts, purchases and various Heritage Fund expenditures. Financial statements are prepared and historical records maintained. All monies and bonds placed on deposit by companies are held in trust by this division. During the reporting period, consolidated fund expenditures totalled $8,922,855.33 as compared to $8,628,992.55 for the previous fiscal year.

Purchasing

It is the responsibility of this division to assist all branches by ordering supplies and equipment, maintaining a central stockroom and an inventory of all equipment owned by the department. This division provides a liaison with the Central Vehicle Agency to ensure vehicles are available for department business and is directly involved with problems related to telephones and space allocation.

Drafting and Cartography

The compilation of a large variety of technical illustrations including polychrome geological and geophysical maps is an important part of the job of drafting. The division maintains liaison with other drafting units as well as with photomechanical and printing firms to ensure quality reproduction of maps and technical reports.

Data and Statistics Branch

The role of this branch is to provide computing services for the entire department. To provide these services, the attendant administrative responsibilties are performed including budgeting, budget maintenance and staffing as required.

Computer systems are developed, implemented and maintained in conjunction with personnel from the Systems Centre, under the direction of a project manager. Co-ordination between the department and the Systems Centre is a responsibility of this branch.

The branch has a limited capacity for system development and programming as required for minor systems, special reports, and for data analysis.

The branch further provides management and assistance to those responsible for each system to assure the computer workload is properly scheduled and performed. Training and instructional manuals are provided to department staff responsible for systems operations.

A remote terminal provides the communications link between the department and SaskComp computers. In addition, six smaller terminals are available for online data processing, program development and maintenance.

Data entry services are provided for the department by branch staff using key entry stations connected to the terminal. Input data in excess of the branch capability are contracted by the branch to other government or private agencies. Keyed data are retained and managed by the branch to provide the necessary reserve in the event of system problems.

The branch further has the responsibility to ensure data security.

Communications Branch

The main function of this branch is the development, production and distribution of all public communications for the department (exclusive of the Marketing and Promotions Division of the Office of Energy Conservation). This includes the production of news releases, advertising and print material, managing media relations, responding to public requests for information and operating a publications office.

Specific activities the branch was responsible for during this period include the production of the 1980-81 Annual Report, an energy policy booklet entitled "Energy Saskatchewan: The Situation Today" and a 16mm colour film called "Saskatchewan Energy". During 1981-82 the branch began printing a quarterly department newsletter, "Resource Dimensions". The newsletter, with updates, is distributed to all mineral resources' employees and to outside requests to a total circulation of 1,000.

The publications office offers for sale departmental publications. In-depth technical reports, as well as maps, are available to the scientific community while more general materials are offered to the public. During the 1981-82 fiscal year, sales of publications totalled $89,208. The branch also stocks a library of books, periodicals and reports relevant to the department.

Geology and Mines Branch

The Geology and Mines Branch is responsible for all geoscientific studies in the department, collection and maintenance of exploration data submitted by the petroleum and natural gas and mineral industries, disposition and conservation of all Crown minerals other than petroleum, natural gas, helium and oil shales, and the administration of certain environmental aspects of mining other than uranium. At year end this latter function was transferred to Saskatchewan Environment.

The branch is divided into three major divisions: sedimentary geology, Precambrian geology and mines. A Geodata Section and a small Information and Education Section carry out staff functions for the branch.

Sedimentary Geology Division

The Sedimentary Geology Division is responsible for geoscientific studies of the sedimentary rocks of the province with special reference to the factors which determine the location and extent of petroleum, natural gas, coal, uranium and industrial mineral deposits, as well as many of the environmental aspects associated with the development of these commodities. Most of the sedimentary strata lie in the subsurface, below the glacial deposits. These beds are studied in drill cores and cuttings by the research section. Non-metallic minerals including coal, potash, silica sand, peat and clays are investigated in the Industrial Minerals Section. During the year a number of environmental impact assessment reports bearing on the uranium and potash industries were reviewed.

This division acted as a co-ordinator of the interdisciplinary oil reservoir simulation program involving the Petroleum and Natural Gas Branch and the University of Regina's Department of Geological Sciences. It has also contracted with the Department of Geology, University of Windsor for a study of low permeability natural gas prospects in Saskatchewan.

Sedimentary Research Section

Research focussed on the following programs during 1981-82:

- regional geological studies of the subsurface strata of Saskatchewan south of the Precambrian Shield, with particular regard to the Devonian strata of the potash mining district and the economic geology of the Mannville Formation;
- detailed studies of the Mississippian oilfields of southeastern Saskatchewan and the Lloydminster heavy oil reservoirs as part of the research into enhanced recovery techniques and reserve estimates and;
- geochemical sampling of the Athabasca Basin.

Staff of the research section again organized the map and rock display at the Subsurface Geological Laboratory for the branch's open house. This marked the sixth year a poster session was held in conjunction with the open house meeting.

The following studies are in progress, both in house and by contract with the Universities of Regina and Windsor:

RS75/1 — P. Ramaekers
Geology of the Athabasca Group (Helikian) in Northern Saskatchewan.

RS75/2 — C. E. Dunn
Geochemistry of water-deposited sediments peripheral to the Athabasca Group (Helikian) in Northern Saskatchewan.

RS76/1 — D. M. Kent and K. Walters — (University of Regina)
Microfacies analysis of the Mississippian Midale Beds in the Glen Ewen Field, Southeastern Saskatchewan.

RS78/1 — J. V. Suryam
Seismic Investigations on the Perimeter of the Athabasca Basin in Northern Saskatchewan. Mirror River — Forrest Lake Areas.

RS78/2 — D. M. Kent and H. Crabtree — (University of Regina)
Sedimentological Model of the Mississippian Frobisher-Alida Beds in the Innes Field, Southeastern Saskatchewan.

RS79/1 — J. V. Suryam
Regional Seismic Cross-section from the East Edge to the centre of the Athabasca Basin, Northern Saskatchewan.

RS79/2 — J. A. Lorsong
Sedimentology of the Mannville Group (Lower Cretaceous) in the Celtic Area, West-Central Saskatchewan.

RS79/4 — C. E. Dunn
Uranium Biogeochemistry in the Wollaston Lake Area, Northern Saskatchewan.

RS80/2 — F. Simpson and M. Singh — (University of Windsor)
Milk River Formation and equivalent strata (Montana Group, Campanian) of southwestern Saskatchewan.

RS80/3 — J. G. Kaldi
Sedimentology, Stratigraphy and Diagenesis of the Mississippian Midale Beds, Midale Oil Field, Southeastern Saskatchewan.

RS80/4 — D. M. Kent and M. Ackhurst — (University of Regina)
Pore Geometry of the Mississippian Frobisher-Alida Beds in the Innes Field, Southeastern Saskatchewan.

RS81/1 — M. A. Wilson
Sedimentology of the Mannville Group (Lower Cretaceous) in the Tangleflags Area, West-Central Saskatchewan.

RS81/2 — D. F. Paterson
Stratigraphy and Oil-shale Potential of the White-Speckled Shales (Upper Cretaceous), Saskatchewan.

RS82/1 — C. E. Dunn
The Middle Devonian Dawson Bay Formation and its Relationship to the Prairie Evaporite in Eastern Saskatchewan.

Report 150 — F. Simpson
Sedimentology, Palaeoecology and Economic Geology of Lower Colorado (Cretaceous) Strata of West-Central Saskatchewan.

Report 194 — C. E. Dunn
The Middle Devonian Dawson Bay Formation and its Relationship to the Prairie Evaporite in the Saskatoon Potash Mining District.

Report 216B — J. V. Suryam
Seismic Investigations on the Perimeter of the Athabasca Basin in Northern Saskatchewan. Wollaston Lake — Black Lake areas.

The following report was released:

Report 233 — F. Simpson
Lithologic descriptions of selected cored sections from the Colorado and Montana Groups (Middle Albian to Campanian) of Saskatchewan.

The following M.Sc. theses were received:

Leibel, R. — Pore Geometry of the Mississippian Midale Beds, Benson Field, Southeastern Saskatchewan.

O'Connell, S. — Viking Formation (Lower Cretaceous) of Southeastern Saskatchewan.

Industrial Minerals Section

This section carries out field and laboratory studies related to the assessment and development of the province's industrial mineral resources. Technical and economic data arising from the investigation and those submitted by industry and other government agencies are incorporated to assist in the search for and evaluation of minerals of economic potential.

A project on the geology of the potash mines commenced during the fiscal year. The principal objectives are compilation of the geology in each potash mine on an ongoing basis, and measurement, sampling and analysis of geological features which affect ore grade and mine stability.

Work continued on the peatland inventory and detailed air photo interpretation of the La Ronge-Montreal Lake area was completed. A report on the peatlands of selected areas west of the La Ronge-Montreal Lake area was in progress.

The Buffalo Narrows Fuel Peat Utilization Study completed in the 1980-81 fiscal year on a contract basis was released in 1981-82 as open file report no. OF81-12. The study represents a further step in the direction of a practical demonstration of the technical and economic viability of energy peat utilization for some northern communities.

A program designed to demonstrate the production and utilization of fuel peat for domestic heating commenced. The demonstration bog, located 11 kilometres southeast of Buffalo Narrows, was surveyed and drainage ditches were excavated. Three peat furnaces were acquired and tested in preparation for use with local fuel peat. The project is funded under the Canada-Saskatchewan Renewables-Conservation Demonstration Program.

Involvement in the review of environmental impact statements and proposals for the development of mineral-related industries continued during the year. Assistance was provided to industry, government agencies and the public on a broad variety of inquiries related to industrial minerals.

Three papers were submitted for publication:

Potential for Fuel Peat Heating in Northern Communities of Saskatchewan; presented at the "Symposium on Peat, An Awakening Natural Resource", Thunder Bay, Ontario.

Summary of Industrial Minerals in Saskatchewan; prepared for the CIMM special volume on industrial minerals.

A summary of coal seam data in Saskatchewan prepared for the Keystone Coal Industry Manual.

Subsurface Geological Laboratory

The main functions of the laboratory are:

- to receive, process, index and store cores and samples recovered during exploratory drilling in the sedimentary area of the province;
- to receive, box and store rock samples collected by field parties operating in northern Saskatchewan;

- to provide lapidary services as required by staff geologists (1,449 thin sections were prepared in 1981-82);
- to bring out for examination and study any drill or other work samples requested by staff; cores and samples requested by representatives of industry for viewing or limited sampling within the framework of regulations under The Oil and Gas Conservation Act.

During the year, 7,832 boxes of core were added to inventory, and samples or drill cuttings were received from 312 wells. Samples washed, dried and placed in labelled glass vials totalled 44,317; of these, 21,546 were duplicates prepared for shipment to the Institute of Sedimentary and Petroleum Geology, Geological Survey of Canada, Calgary, Alberta. Non-confidential samples shipped to the institute during the year numbered 36,940.

Requests by visitors and staff resulted in withdrawals from storage of 18,388 boxes of core for study. Temporary removal of core from the lab for more detailed analysis was approved for nine wells. Numerous companies made written requests for permission to have cores slabbed and analysed outside the province prior to shipping to the Subsurface Geological Laboratory for storage.

The general public has continued to show interest in laboratory building tours, with elementary school teachers and their earth science classes predominating. Several tours were conducted during the year.

Precambrian Geology Division

This division provides basic regional geoscientific data for mineral exploration and other aspects of resource development through regional and detailed surveys of the bedrock and surficial geology, geochemistry and geophysics of the Precambrian Shield area of northern Saskatchewan, and by studies of metalliferous and other mineral deposits and environments. An ongoing inventory of data is compiled and released in technical publications, open file reports and maps. The division is also responsible for the resident geologists' offices in northern Saskatchewan. Responsibility for maintenance of the mineral assessment file and other data files was transferred to the Geodata Section effective January, 1981. The Precambrian Geology Division is organized into: a Precambrian Mapping Section and an Economic Geology Section.

Precambrian Mapping Section

The reconnaissance (1:100,000-scale) mapping program was reduced to one geological field party in the summer of 1980. This party mapped the Phelps Lake Southwest area (about 3000 km^2), to complete coverage of the Precambrian basement around the Athabasca Basin.

In the second year of the Sub-Athabasca Basement Geology Project, summary logs from over 600 drill holes were compiled. These data are being assembled and analysed from mineral industry activities in the Athabasca Basin in order to provide subsurface geological and other maps of the basement rocks underlying the Athabasca Sandstone.

Other Precambrian mapping activities included continuing work on the 1:250,000 geological map series of northern Saskatchewan by providing three new NTS Sheet maps. Work was also continued on the Saskatchewan Shield Geochronology Project by contract with Carleton University.

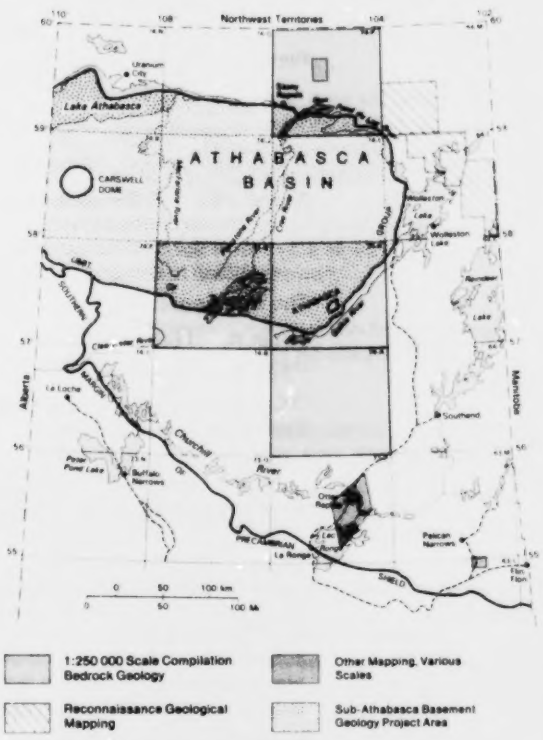


Figure 1 — Precambrian Mapping Division Projects

Since one geologist was placed in the editorial section at the end of 1980, the processing of reports has been speeded up. In addition to the normal published reports, an open file system was introduced in order to improve access of information to the public. The following reports were published or in production at year end:

Christopher, J. E., Macdonald, R. and Davie, R. F., editors (1981):
Summary of Investigations, 1981, Saskatchewan Geological Survey;
Miscellaneous Report 81-4

Colborne, G. L. (1982):
Geology of the Lowe Lake (East) Area;
Open File OF 82-1

Forsythe, L. H. (1981):
Geology of the La Ronge-Hunter Bay-Cartier Lake Area
Open File OF 81-1

Ray, G. E. (1982):
Bedrock Geology and Geochemistry, Daly Lake (West) Area and Part of Midde Foster Lake Area;
Report 208

Economic Geology Section

Mineral deposits are evaluated through field and laboratory studies. A mineral deposits inventory and core collection are maintained and direct assistance to the mineral exploration industry is provided through the Regina office and field offices of the resident geologists.

Economically mineable uranium deposits have been found in the Uranium City area and throughout the Athabasca Basin. Studies of these deposits and of their geological settings provide an understanding of their formation and thus assist in the search for new deposits. A geological mapping and geochemical sampling project was initiated around Donaldson Lake to the north of Eldorado's Beaverlodge operation (Fig. 2). Also undertaken, were geological and geochemical studies of individual ore zones within the Athabasca Basin, respectively at Cluff Lake and Collins Bay, Wollaston Lake.

Base and precious metals in Saskatchewan are currently produced by the Hudson Bay Mining and Smelting Company Limited's Flin Flon mine. Historically however, there have been producing mines in other areas indicating a wider potential, particularly for gold. Two gold projects were carried out, one in the vicinity of the Komis prospect west of Waddy Lake and the other around Phantom Lake and Schist Lake south of Flin Flon. The latter project forms part of an ongoing investigation of the numerous gold prospects and past producers in the Flin Flon-Amisk Lake region. Both projects involved geological mapping and geochemical bedrock studies.

A predominantly geochemical base metal project at Annabel Lake northwest of Flin Flon was contracted to the University of Regina. This study will provide information on the chemistry of the volcanic rocks and thus enable comparison with those volcanic rocks which contain producing mines.

The mineral deposits index is an inventory of economic mineral occurrences in northern Saskatchewan. During the year work continued on computer filing and updating.

The core collection, housed principally in La Ronge, comprises diamond drill core from many of Saskatchewan's metallic mineral deposits and other geologically important localities. The collection program has received considerable impetus from the recent high level of mineral exploration for uranium.

The resident geologists, through offices located in La Ronge, Creighton and Uranium City assist and monitor the acitivities of the mineral exploration industry in northern Saskatchewan. Core collection and mineral deposit investigations are also undertaken. The offices maintain files of current mineral claim maps, air photos, geological maps and reports and assessment work submissions for their respective districts.

Publications

Parslow, G. R., Watters, B. R. and MacDougal, F. H. (1981):
Chemistry and origin of carbonate rich rocks in the area east of Amisk Lake, Saskatchewan.
Can. Min. Met. Bull., no. 836, pp. 81-86.

Parslow, G. R. and Thomas D. (1982):
Syngenetic uranium occurrence in the Cree Lake Zone, Saskatchewan, Canada. Uranium mineralogy and geochemistry of radio-elements, in crystalline rocks.
Mineralogical Magazine, Vol. 46, pp. 163-173.

Sibbald, T. I. I., Hoeve, J., Ramaekers, P. and Lewry, J. F. (1981):
Saskatchewan uranium field trip guide. Can. Inst. Min. Geology Division,
Uranium Field Excursion Guidebook, pp. 132-166.

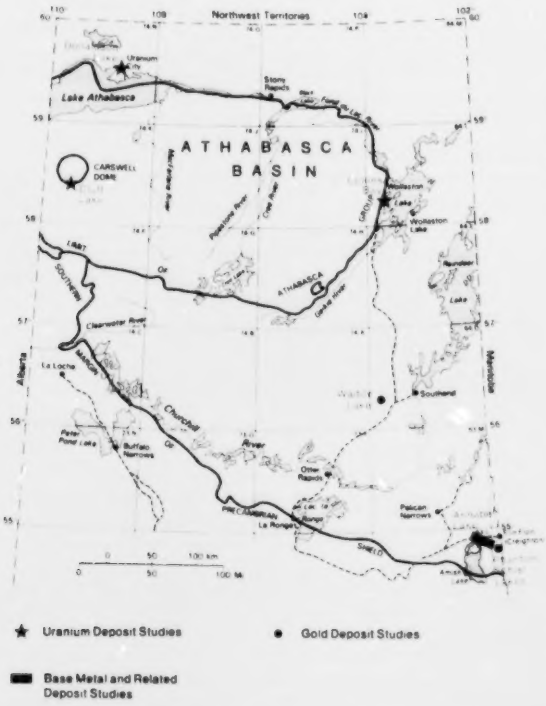


Figure 2 — Economic Geology Division Projects

Geodata Section

Sedimentary Geology Unit

During the year, clerical staff pulled 22,143 files, 13,821 for department staff and 8,322 for industry. In addition, 1,216 were pulled for processing. Over 16,000 pages were xeroxed for industry, 1,078 new wells were processed, 442 letters requesting delinquent information were mailed out and 715 new files were set up as licences were received from the Development Section of Petroleum and Natural Gas Branch. In addition, 331 name changes were processed during the year and 4,845 letters containing drilling information were received, recorded and filed.

Nine hundred and ten well records were added to the Computerized Well Data System. The records on 2,078 wells were updated or corrected and 26 cancelled or incorrect locations were removed from the system files. During the year in review formation tops were picked in 104 wells and added to the system files.

In addition, 1,034 wells were coded for entry into the computer system, of these 1,014 were checked for accuracy during that period. In addition, the records of 1,067 wells were amended by coding supplementary or correcting information. Forty-nine searches of the System Files were conducted, 33 of which were for geological survey staff and 16 were for industry, universities and the general public. A total of 16 "Tellus" programs were written during the year.

Precambrian Geology Unit

The acquisition of mini-computing equipment has enabled a number of proposed computerized files in the Precambrian Geology Unit portion of the section to be implemented. These include the mineral index file, the Precambrian resource file and the Precambrian original data file. A system to assist the processing of the mineral assessment work submissions was designed for the Mines Division and has proved satisfactory. A system to capture field-data was started and considerable work was done to improve the geochemical file system which is resident on the mainframe computer.

With respect to the assessment work files, 211 were processed, 63 visitors were received, 13 requests for information by mail and 36 by telephone were dealt with. These requests resulted in 3,926 copies of maps and 19,457 pages of xeroxing being sent to industry. The Index to Assessment Work for the Reindeer Mining District of Saskatchewan was printed as Misc. Report 82-10.

The coding of data and keywords for the Geoscan System continued throughout the year and consultations with representatives of the Geological Survey of Canada with regard to the redesign of the Geoscan System and the implications of that redesign on the submission of data and equipment were continued.

One hundred and nine new mineral deposit index cards were created from the assessment work files. Five national mineral index cards and 188 non-confidential mineral deposits index cards were filed. Copies of 301 aeromagnetic maps with mineral showings plotted on them were provided for industry, and more than 120 new mineral showings were plotted on the aeromagnetic maps. Five hundred and twelve errors indicated on a printout of the computerized mineral index file were checked and 150 of these were eliminated. Moreover, 2,040 mineral index cards were xeroxed by request and a further 531 cards were copied, coded and distributed as part of standing orders.

Geophysics Unit

The Athabasca Basin seismic report (216-B) was completed and work commenced on Report 216-C. Updating of the composite geophysical maps of the sedimentary basin was also started.

Sixty-seven licences to conduct geophysical exploration, 116 geophysical crew certificates and 91 permits to handle and fire explosives were issued.

Three hundred and seventy-one monthly reports of geophysical activity and 149 maps showing the locations of shot-holes were processed, and 57 flowing shot-hole locations were plotted on the master map and dealt with. Fifty-two submissions under the department's incentive regulations and 18 submissions under The Petroleum and Natural Gas Regulations 1969 were processed. Sixty-five preliminary plans of proposed geophysical surveys were noted and filed for checking against actual activity.

Requests for information or complaints were received resulting in 355 items of geophysical information (maps and reports) being provided to industry and nine complaints arising from geophysical activities being dealt with.

Two sets of structure test hole logs were received, indexed and filed.

Information and Education Section

The section is responsible for:

- training northern residents in prospecting and exploration techniques by conducting annual Prospectors' Schools in northern communities;
- preparing reviews of various aspects of the provincial mineral and fuel industries and providing rock and mineral specimen kits and educational display material for Saskatchewan schools;
- providing a staff function to the branch in various technical and administrative matters;
- maintaining liaison with other branches and the department in surveys of energy-related projects and geological research, in news releases and summary accounts of geological activities.

The tenth Annual Prospectors' School was conducted in La Ronge from April 6 to May 14, 1981 within the curriculum of the La Ronge Community College.

Mines Division

This division is responsible for the disposition of all Crown minerals with the exception of petroleum, natural gas, helium and oil shale; the development and conservation of all Crown minerals with the aforementioned exceptions; and the administration of certain environmental aspects of mining operations. The activities of the division are carried out through the Mining Lands Section and the Development Section.

Mining Lands Section

Mining lands is responsible for the administration and disposal of Crown minerals under the following regulations:

- The Mineral Disposition Regulations, 1961 (uranium, base and precious metals);
- The Quarrying Regulations, 1957, (sand, gravel, clay, bentonite and other quarriable substances);
- The Alkali Mining Regulations (sodium sulphate)
- The Coal Mining Regulations, 1957, (coal); and
- The Subsurface Mineral Regulations, 1960, (potash, salt).

Activities of the section are centered in Regina, but a field office is also maintained in La Ronge to permit local administration of regulations.

The number of new dispositions taken out under The Mineral Disposition Regulations, 1961, decreased by 82 per cent from the previous year with 276 mineral claims, 113 claim blocks and 10 prospecting permits being recorded. The marked decrease in the number of new dispositions were due primarily to decreased interest in disposition for placer gold along the Saskatchewan River system, which resulted in only 276 mineral claims being recorded compared to 1,705 in the previous year. There was a decrease in the number of claim blocks recorded due to a general slowdown in mineral exploration activity. During the year a total of 1 047 818 hectares (2,589,213 acres) were acquired under disposition, a decrease of 36 473 hectares (90,129 acres) over the previous year.

On March 31 there were 65 916 hectares (162,880 acres) held under 4,072 mineral claims; 3 901 912 hectares (9,640,836 acres) held under 111 mineral prospecting permits and 50 730 hectares (125,358 acres) held under 579 mineral leases. The total area held was down 12 per cent from March 31, 1981.

In the year under review, nine prospecting permits of 2 193 hectares (5,418 acres) and 73 leases comprising 838 hectares (2,017 acres) were granted under The Quarrying Regulations, 1957. Eight of the prospecting

permits were for clay and one was for dolomitic limestone. Of the leases, 67 were granted for sand and gravel, of which 22 (798 acres) were acquired by Saskatchewan Highways, 22 (367 acres) by rural municipalities, 22 (401 acres) by private interests, and one (190 acres) by a government department. At year end, 3 648 hectares (9,015 acres) were held under 12 prospecting permits and 18 815 hectares (46,495 acres) held under 969 leases.

The area held under disposition for alkali minerals remained unchanged during the year at 8 269 hectares (20,432 acres).

One coal lease was issued and 40 were surrendered, resulting in a total of 162 749 hectares (402,161 acres) being held under disposition for coal on March 31, down 3.6 per cent from the previous year.

One potash lease was issued and two were reduced in size, giving a total of 258 546 hectares (638,881 acres) held under disposition for potash on March 31, down 4.8 per cent from the previous year.

The Mineral Disposition Regulations, 1961, were amended to protect surveyed areas required for public purposes from mineral disposition.

Certain undisposed Crown lands in the province were withdrawn from staking and disposition by Minister's Orders No. 663 to 674 inclusive to protect:

- lands tentatively selected by Indian bands in the Ministikwan, Bronson, Whitebeach, Meadow, Delaronde, Chitek, Turtle and Witchekan Lakes areas and the Beaver River area; and
- an experimental peat energy development near Buffalo Narrows.

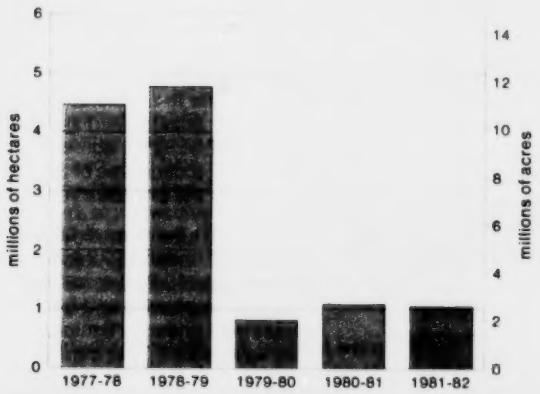


Figure 3 — New Areas Acquired Under Claims, Claim Blocks and Permits

Development Section

The Development Section is responsible for the administration of certain sections of The Mineral Disposition Regulations, 1961, and The Pollution Prevention Regulations for the Mineral Industry, 1970. The former governs the conduct and reporting of mineral exploration work programs, while the latter concerns industrial waste pollution associated with mining operations.

Assessment Work Unit

The unit is responsible for evaluating technical data submitted as assessment work by the mineral industry under The Mineral Disposition Regulations, 1961.

Assessment work received during a fiscal year gives an indication of major trends in the level of mineral exploration activity and the geographic areas in which such activity has taken place, although it does not provide a true measure of total exploration expenditures. A total of 2,251 submissions covering nine categories of exploration work were received, up 10.7 per cent over the previous year. Exploration expenditures claimed were up nearly 13 per cent from those of 1980-81 ($54 million vs. $47.9 million; vs. $49 million in 1979-80). Approximately 47 per cent of reported expenditure was for diamond drilling, and approximately 76 per cent was associated with the search for uranium in the Athabasca Basin.

Environment and Engineering Unit

The major functions of the unit are to:

- review project proposals and technical reports pertaining to mining developments referred to the department by the Environmental Assessment Secretariat of Saskatchewan Environment as part of the environmental impact assessment process;
- review applications submitted by mine operators for approval to discharge industrial wastes under The Pollution Prevention Regulations for the Mineral Industry, 1970, to prepare licensing documents, and to ensure compliance with licensing requirements; and
- monitor development and mining operations pertaining to those minerals for which the branch has responsibility.

During the year, 30 project proposals and technical reports pertaining to mine developments were reviewed; 10 of these were directly associated with environmental assessments required by Saskatchewan Environment.

Most of the work of the unit during the year was associated with compilation and review of data necessary for preparation of licensing documents for the discharge of industrial wastes at operating mines. This involved four mine inspections, review of numerous new technical reports and several meetings with mine operators and officials of Saskatchewan Environment. During the year licensing documents were issued for nine of the 10 operating potash mines in the province, and for two gold mining test projects. On March 30, The Pollution Prevention Regulations for the Mineral Industry, 1970, were repealed and Saskatchewan Environment assumed full responsibility for pollution prevention at all mining operations in the province.

Mine development and operating practices were reviewed through 10 inspections involving potash, sand and gravel and placer gold mining operations.

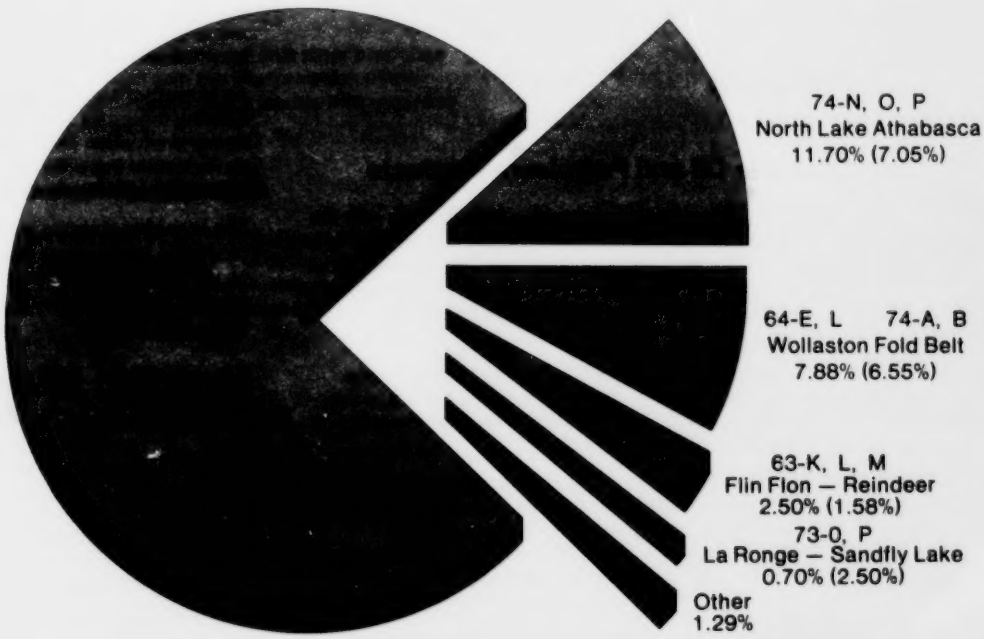


Figure 4 — 1981-82 Exploration Expenditure Distribution by Area (1980-81 Comparative Distribution)

Policy Planning and Research Branch

The Policy Planning and Research Branch conducts research and analysis of policy issues related to energy and mineral resource development.

This information is provided to the government to assist in the formulation of policies regarding such topics as: the rate of development of the province's mineral resources; the pricing and taxation of mineral and energy resources; energy research, development and demonstration activities; and non-conventional and renewable energy sources.

The Policy Planning and Research Branch has a Resource Development Division and an Energy Division.

Resource Development

The Resource Development Division has four sections: fuels, metallic minerals, industrial minerals and mineral statistics.

Fuels

Crude Oil and Petroleum Products

The branch plays a major role in negotiations with the federal government on matters relating to oil pricing and revenue sharing. In particular, negotiations in the past year led to the signing of the "Canada—Saskatchewan Letter of Understanding Relating to Energy Pricing and Taxation", in October, 1981.

A continuing responsibility over the past year was assessing the often-times detrimental impact of the federal National Energy Program on the province's oil and gas industry.

Proposals for a heavy oil upgrader were studied and continuing evaluations of market conditions for existing heavy oil production were carried out. Further evaluations were made on the ongoing problem of shut-in production in some of the province's light and heavy oil fields.

The branch's co-ordinating role for other provincial departments and agencies working with the federal government to develop emergency preparedness programs in the event of disruptions in our normal oil supply also continued during the year.

Natural Gas

During the 1981-82 fiscal year, work continued towards the development of a new natural gas policy for Saskatchewan — a policy intended to create more natural gas exploration and development activity in the province. Among the activities, a re-evaluation of Saskatchewan's natural gas reserves and deliverability was undertaken.

The branch prepared a proposal for the Minister recommending fieldgate price increases to Saskatchewan natural gas producers.

The branch provided evidence to the National Energy Board regarding the pricing of natural gas in the domestic market in Canada.

Staff members continued to carry out the department's responsibilities as the provincial co-ordinating agency for the Saskatchewan segment of the Alaska Highway Natural Gas Pipeline Project.

Coal

The branch continued its lead role in developing and assessing tax and royalty schemes which may be applied to provincial coal production. A particular responsibility was to assist in setting the 1981 mill rate for the freehold coal tax.

An important function for the branch was to update existing forecasts with respect to the coal supply and demand situation and market prices. Such forecasts are an important ingredient to successful resource planning and energy policy development.

The branch's ongoing responsibilities for coal included preparing briefing material on the government's position on various briefs and proposals forwarded by other governments and private groups.

Metallic Minerals

Uranium

Branch staff were responsible for the establishment of liaison committees with industry representatives to serve as a basis for discussion of issues related to royalty matters and Crown land disposition matters.

At the request of the provincial special task force, the branch participated in a review of the decision made by Eldorado Nuclear Limited to close its uranium mine and mill operation near Uranium City in mid-1982. Branch participation concentrated on financial review and production cost analysis.

Long-term revenue forecasting, an ongoing function of branch staff, indicated the continued viability of the Saskatchewan uranium industry throughout the decade, despite softened world market conditions.

Other Metallic Minerals

Branch staff contributed to the review of environmental impact statements related to new mining developments. In particular, industry has expressed interest in the province's gold resource potential.

Industrial Minerals

Potash

During the year, the Potash Resource Payment Agreement was reviewed and at year end, discussions were initiated with industry to develop a replacement for the current agreement which expires June 30, 1984.

Industry interest in expansion of production capacity continued during 1981-82, with applications being submitted to the department under the terms of the resource payment agreement.

The branch assisted the industry and other branches within the department with the interpretation of the agreement and addressed policy issues with regard to potash in the province.

Other Industrial Minerals

The branch also addressed policy issues related to the development and management of other industrial minerals. A member of the branch attended meetings of the federal-provincial working group on the mineral industry.

Mineral Statistics

Mineral statistics continued to be collected and disseminated by the branch providing a vital source of information to both industry and branch members for monitoring and forecasting purposes.

A member of the branch represented the department at meetings of the federal-provincial committee on mineral statistics.

The following charts indicate the value of Saskatchewan mineral and energy resource sales in 1981 and the amount of Crown revenue derived from mineral and energy resource production in 1981-82.

Figure 5 — Crown Revenue Derived From Minerals 1981-82 Fiscal Year

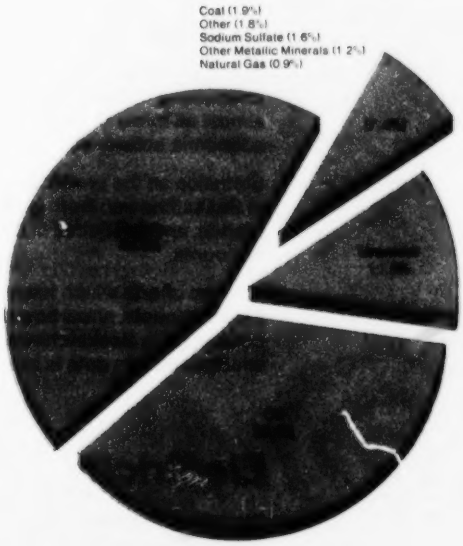


Figure 6 — Value of Saskatchewan Mineral Sales Calendar Year 1981

Energy Division

The Energy Division includes four sections: energy policy, electricity, energy technology and the Canada-Saskatchewan Renewables-Conservation Demonstration Program.

Energy Policy

The role of the energy policy section has been to establish and implement an energy policy for the province. This section has advanced its work to develop a long-term framework for energy policy so that issues affecting Saskatchewan can be analyzed from an energy perspective on a uniform basis.

During the past year the energy policy section carried out a rural space heating study and then participated in a joint task force with Saskatchewan Power Corporation to examine the economically feasible alternatives. This resulted in a decision to expand natural gas services to selected rural areas in the province. The section also co-operated in a study to develop a natural gas policy for the province.

Branch staff were involved in continuing negotiations with the federal government on various aspects of the National Energy Program; specifically, this section was involved in the areas regarding the Canadian Oil Substitution Program (COSP) and the Distribution System Expansion Prgram (DSEP).

During the year, work continued on an energy demand forecasting model for Saskatchewan which forecasts almost all forms of energy consumption in relation to economic activity and energy prices.

Statistics on the production and consumption of energy in Saskatchewan were gathered and analyzed by the branch, and published in the Saskatchewan Energy Flow Accounts.

The two charts which follow, derived from the Energy Flow Accounts, show how energy was produced and consumed in Saskatchewan in 1980, the latest year for which complete data is available.

Electricity

The branch participated in the Government review of the Western Electric Grid Project and contributed to the generation expansion program developed by the Saskatchewan Power Corporation for the period 1981-2000.

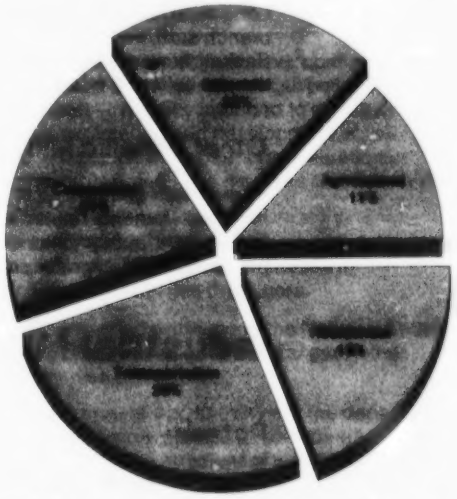


Figure 7 — Saskatchewan Consumption of Energy by Sector

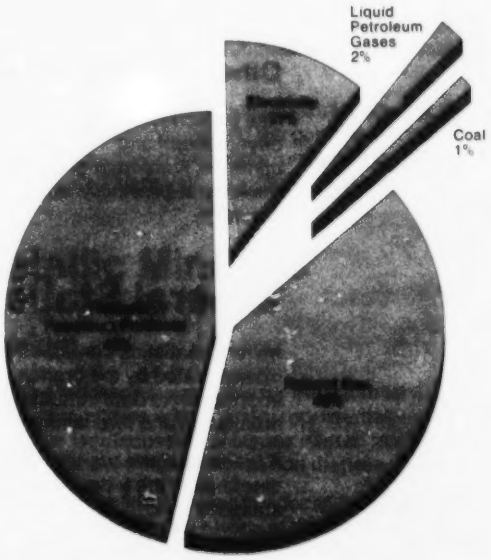


Figure 8 — Saskatchewan Consumption of Energy by Type

Energy Technology

The branch co-ordinates energy research, development and demonstration activities in Saskatchewan. This involves advising the government on energy technology issues, monitoring research, development and demonstration project activities within and outside the province, establishing funding programs to accelerate the development of new energy technology and administering funding programs once in place.

In 1981-82, the branch administered the Canada-Saskatchewan Renewable-Conservation Demonstration Program. As well, work got underway to develop the Saskatchewan Alternative Fuel Test Program and Canada and Saskatchewan reached an understanding to put in place a $30 million five-year Heavy Oil/Fossil Fuel Research, Development and Demonstration Program beginning in 1982-83.

The branch participated with several other departments and agencies in a multi-client study on the future potential business opportunities related to the development and utilization of biomass energy. The branch also co-operated with the Saskatchewan Power Corporation and the Saskatchewan Oil and Gas Corporation to test lignite coal samples in Japan's liquefaction pilot facilities.

Staff representatives attended meetings of various interdepartmental, federal-provincial and interprovincial committees to obtain information on various initiatives in energy research, development and demonstration and to promote a more co-ordinated national effort in the development of new energy technologies.

Canada-Saskatchewan Renewables-Conservation Demonstration Program

The Canada-Saskatchewan Renewables-Conservation Demonstration Program continued to provide funding in 1981-82 for various projects which demonstrate the economic and technical feasibility of utilizing renewable energy or energy-conserving technologies. Since the program began in 1980-81 a total of $6.05 million has been approved for 35 projects. The following 16 projects received funding in 1981-82:

- the Saskatoon Low Energy Housing Project
- the Conservahome Project
- the Audio/Visual Series on Energy Efficient Housing
- the Energy-Efficient Operation of Farm Tractors Demonstration
- the Farm Energy Management Program (Phase I)
- the Energy-Efficient Farm Implements Project
- the Agricultural Energy Audit Program
- the Tisdale Energy-Efficient Recreational Complex
- the Low Grade Geothermal Well (Phase II)
- the Solar Heated Garage/Workshop
- the Trombe-Wall on a Livestock Building Demonstration
- the Wind-Electric Conversion System
- the Small Wind Turbines Demonstration
- the Fuel Peat Utilization Project
- the Flax Straw-Fired Central Heating System
- the Hudson Bay Wood Gasification Plant (Phase IV)

Under the terms of the federal-provincial agreement that established the Canada-Saskatchewan Renewables-Conservation Demonstration Program, a total of up to $18 million will be provided for various innovative energy-related projects before the program expires at the end of 1983-84.

Legal Branch

It is the responsibility of the Legal Branch to provide professional opinions and advice on all legal matters relating to the operation of Saskatchewan Mineral Resources. The branch receives its direction from the associate deputy minister who is also the department solicitor. The solicitor prepares and drafts acts, regulations, minister's orders and approvals, and legislative materials such as orders-in-council, as well as preparing any other legal documents under which the department and industry operate.

This branch ensures the legal validity of department forms and procedures and assures compliance with existing legislation. The branch also reviews acts, regulations and orders from other jurisdictions to assess how these might affect Saskatchewan Mineral Resources and thereby the province.

The Legal Branch is also responsible for the operation of mineral titles transfer.

Mineral Titles Transfer

Mineral titles is responsible for: the preparation and registration of mineral land related documentation; and the maintenance of a mineral land ownership record.

Mineral Land Ownership and Documentation

- A computerized mineral land data base is maintained on all freehold mineral ownership that is taxable, in accordance with The Mineral Taxation Act.
- A computerized land file is maintained on all productive wells in the province; the information generated is used for taxation and compensation requirements.
- All mineral land transfers to the province are prepared and registered.
- Foreclosures on freehold mineral properties are enforced.
- Mineral land ownership for various branches of the department and for industry are interpreted and verified.
- Caveats that affect Crown mineral lands are registered and withdrawn.
- Mechanics' liens filed against Crown mineral dispositions, under The Mechanics' Lien Act are registered and recorded.
- Crown Duplicate Certificates of Title are retained.
- Mineral trust interest is recorded and maintained.

Mineral Land Records

- A complete mineral land record of all Crown and freehold mineral ownership is maintained.
- A record of all Crown mineral land dispositions in the surveyed area of the province is maintained.
- Mineral land ownership for every well that is licensed is verified.
- Crown mineral lands available for disposition under the various acts and regulations are verified.
- Acreage figures for all Crown mineral land disposition are computerized.
- Information regarding the disposition or availability of Crown mineral lands is supplied to industry.
- A record of all freehold mineral title ownership changes is maintained.
- A Crown mineral land inventory is maintained.

During the fiscal year under review there were 166 caveat removals and eight mechanics' lien registrations. The following tables reflect the total hectares (acres) forfeited and transferred to the Crown and the number of Crown titles issued.

Forfeitures

April 1, 1981 to March 31, 1982

Land Registration District	Hectares	Acres	Titles
Battleford	43.30	107	1
Humboldt	97.13	240	2
Moose Jaw	418.86	1035	4
Regina	445.17	1100	6
Saskatoon	607.05	1500	11
Totals	**1611.51**	**3982**	**24**

Transfers

April 1, 1981 to March 31, 1982

Land Registration District	Hectares	Acres	Titles
Humboldt	491.71	1215	4
Moose Jaw	129.50	320	3
Regina	1606.25	3969	20
Saskatoon	.40	1	1
Yorkton	181.31	448	5
Totals	**2409.17**	**5953**	**33**

Petroleum and Natural Gas Branch

The Petroleum and Natural Gas Branch has major responsibilities in all areas where provincial jurisdiction touches oil and gas resources including: disposition of mineral rights; well licensing and surveillance of all exploration and production operations; oil and gas reserves and producibility estimates and royalty and tax legislation.

The branch is organized into five divisions:

- Geology and Petroleum Lands
- Engineering Services
- Economic and Fiscal Analysis
- Petroleum Development
- Petroleum Statistics

A number of important events occurred in the fiscal year under review that affected the performance of the petroleum industry; an important sector of the Saskatchewan economy.

The federal government's National Energy Program (NEP), announced in October, 1980 was a year old and the dire predictions made at the time of the announcement were born out by real statistics. The number of oil and gas wells drilled in Saskatchewan dropped by 46 per cent. This decline was somewhat exaggerated because drilling activity was not expected to keep pace with the record year experienced in 1980. Nevertheless, it represents a reversal of industry optimism. Crude oil production declined by 21 per cent. Revenue from the sale of crown petroleum and natural gas rights fell by 43 per cent.

It was clear that the unilateral policies contained in the NEP were unacceptable to producing provinces. In Saskatchewan the combination of provincial royalties and new federal taxes on crude oil production caused certain producers to limit production considerably below capacity for most of 1981 in an attempt to minimize financial losses.

The stand-off between governments ended on October 26, 1981, with the signing in Ottawa of a letter of understanding between the Governme[illegible] Canada and the Government of Saskatchewan rela[illegible]g to energy pricing and taxation. The October, 1981, and January, 1982, crude oil price increases were passed through to producers with virtually no provincial royalty or tax charges. These measures resulted in a temporary improvement in crude oil production but by the end of the fiscal year one third of total provincial oil production was shut-in as a result of severe marketing problems.

Branch personnel were deeply involved in negotiations leading up to the Canada-Saskatchewan agreement and in implementing the policies and programs contained in the agreement. Commencing on January 1, 1982, production from wells completed after December 31, 1980, began to receive world oil prices. Discussions had commenced with industry representatives concerning a new cost sensitive royalty/tax structure for high cost enhanced oil recovery projects. Personnel in the Petroleum Statistics Division celebrated an important achievement with the disappearance of a large backlog of unprocessed production and disposition reports. On March 31, 1982 petroleum statistics were up-to-date in Saskatchewan and available to any interested party.

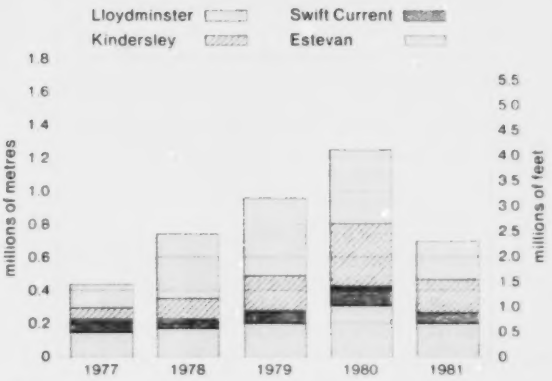


Figure 9 — Total Metres Drilled by Area

Drilling Activity

There were 808 wells drilled during the calendar year 1981, a decline of 46 per cent from the previous year's record of 1,498. The breakdown of drilling activity is as follows: 540 completed oil wells, 16 completed gas wells and 252 abandoned dry holes for an indicated success ratio of 69 per cent. There were 791 licences issued in comparison to the 1980 record of 1,626.

Total metres drilled were 698 500 (2,291,667 feet).

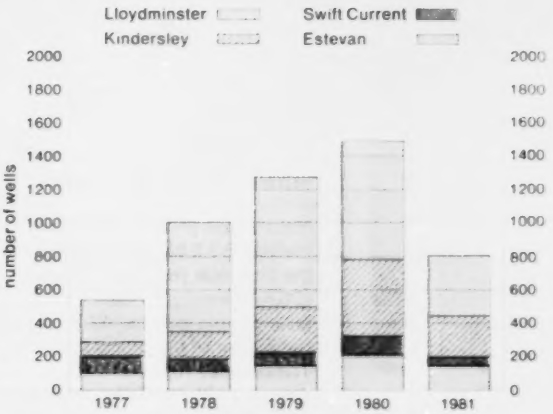


Figure 10 — Wells Drilled by Area

Crude Oil Production

Oil production for 1981 was 7.39 million cubic metres (46.5 million barrels) compared to 9.33 million cubic metres (58.7 million barrels) in the previous year. This decrease of 21 per cent was the result of marketing difficulties for Southeast light crude which saw this area at approximately 50 per cent of capacity for 10 months of 1981. In addition, the Southeast medium crude and the Southwest medium crude producing areas were voluntarily shut-in by producers to a 50 per cent level for six months in protest to the high federal and provincial royalties and taxes.

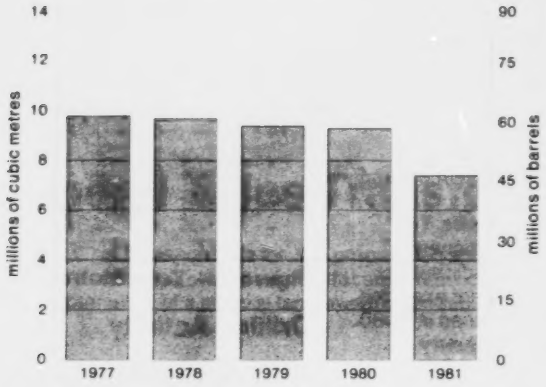


Figure 11 — Crude Oil Production

Natural Gas Production

Natural gas production in 1981 was 1.50 billion cubic metres (53.2 billion cubic feet), a slight decrease from the previous year when it was 1.59 billion cubic metres (56.4 billion cubic feet). Sales of natural gas were 1.19 billion cubic metres (42.2 billion cubic feet) with the remainder of the production used for lease fuel or flared. These sales represent about 40 per cent of provincial demand with the difference imported from Alberta.

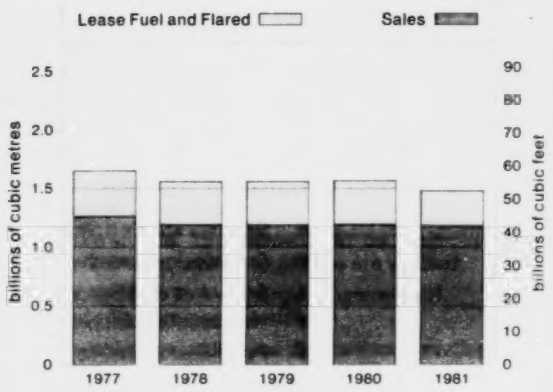


Figure 12 — Natural Gas Production

Geology and Petroleum Lands Division

Geological Mapping and Land Evaluation

This section has two principal responsibilities: geological mapping and land evaluation.

Geological Mapping

Geological maps (structure contour and isopach) are drawn and maintained for all oil and gas producing areas in the province. The maps are used for land evaluation, for reserve calculations in the Engineering Services Division, and in helping solve problems related to the producing areas. At the end of the fiscal year, 106 pool maps were being maintained on a current basis. The maps may be purchased from the department's publications office.

In carrying out their mapping work geologists acquire a detailed knowledge of the geology of producing oil and gas pools. This expertise is put to use within the Petroleum and Natural Gas Branch when staff members are asked to make recommendations on submissions from industry or in dealing with other administrative matters.

Industry submissions in the reporting period included applications for pressure maintenance of producing units, conversion of wells to salt water injection and disposal, and secondary recovery of oil by waterflood. As well, requests were received for permission to drill wells outside the approved spacing pattern and for abnormal well spacing patterns.

Information and advice were made available to other branches, departments and the general public on requests ranging from the interpretation of the economic geology of known oil and gas accumulations to the hydrocarbon potential of unexplored prospects.

Land Evaluation

The economic potential of hydrocarbon resources underlying specific areas of the province is determined as required by the department. Monetary evaluations of reserves are primarily for land sales and special land agreements. Other major responsibilities are to:

- review and recommend requests from industry for the posting of specific Crown mineral lands at department land sales;
- prepare sales notices and technical data for sales;
- review and recommend acceptance or rejection of bonus bids received from industry on posted acreages;
- evaluate and select Crown acreage in drilling reservations when such reservations go to lease;
- administer net royalty leases and inspect non-unit net royalty leases and farmouts to ensure compliance with the terms or agreements made within the department;
- review requests for waiver of offset well commitments on leases adjoining certain freehold lands producing oil or gas and make follow-up recommendations; and
- advise industry and the general public concerning the value of mineral rights for specific areas.

Five sales of Crown petroleum and natural gas rights were held during the 1981-82 fiscal year. Revenues totalled $43,732,405.90, considerably below the $77,636,593.14 realized from the four sales held the previous year. Dispositions of mineral rights in the sales totalled 145 720 hectares (360,070 acres), consisting of 10 permits containing 68 480 hectares (169,213 acres), 31 drilling reservations comprising 46 557 hectares (115,040 acres), and 231 leases consisting of 30 683 hectares (75,817 acres).

Revenue from the sale of petroleum and natural gas rights for the past six years is shown in Figure 13.

Petroleum Lands

This section is responsible for the administration and disposition of Crown mineral lands under The Petroleum and Natural Gas Regulations, 1969; The Helium and Associated Gases Regulations, 1964; and The Oil and Shale Regulations, 1964.

The number of petroleum and natural gas permits under disposition decreased from 47 at April, 1981 to 39 at March 31, 1982, with a decrease in area from 541 544 hectares (1,338,137 acres) to 289 300 hectares (714,851 acres). Drilling reservations under disposition decreased in the same period from 45 to 36 with a decrease in area from 78 435 hectares (193,810 acres) to 62 599 hectares (154,680 acres). There were 5,959 petroleum and natural gas leases in effect. Area under lease totalled 2 233 479 hectares (5,518,851 acres).

Helium dispositions reached 43 216 hectares (106,785 acres) with 27 300 hectares (67,458 acres) held under three permits and 15 916 hectares (39,327 acres) under seven leases. Also in effect at the end of the fiscal year were two oil shale leases totalling 3 950 hectares (9,760 acres) and twelve oil shale permits totalling 428 458 hectares (1,058,704 acres).

The Geology and Petroleum Lands Division played a lead role in getting an oil and gas exploration program started on the area of the proposed Grasslands National Park. Over 100 miles of seismic surveying was conducted on the west block of the area of the proposed park in the winter of 1982.

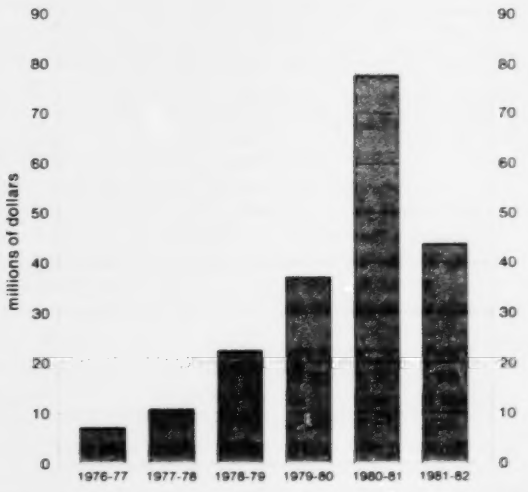


Figure 13 — Revenue from the Sale of Crown Petroleum and Natural Gas Rights

Engineering Services Division

The Engineering Services Division evaluates Saskatchewan's crude oil and natural gas reservoirs to ensure that exploration, development and production of these resources follows good conservation and engineering standards. Sound management of these resources is essential to achieve efficient production and ensure maximum benefits from development. The mandate for these responsibilities comes from The Oil and Gas Conservation Act, The Mineral Resources Act, The Pipe Lines Act, The Oil Well Income Tax Act and respective regulations.

The main responsibilities of the division are to:

- determine crude oil and natural gas reserves and prepare production forecasts for use by industry and government in planning and developing policies;
- evaluate industry applications for enhanced oil recovery projects, waste water disposal wells and other proposals and participate in public inquiries held to consider these applications;
- assess unitization proposals to ensure that Crown lands receive fair and equitable unit participation;
- evaluate industry submissions for incremental oil production from enhanced recovery projects to establish reductions to Crown royalties and oil well income tax;
- establish pool boundaries, well spacing and target areas to facilitate orderly oil and natural gas development;
- issue maximum permissive production rates for oil wells and daily allowables for gas wells, and monitor production to ensure that these rates are not exceeded;
- issue construction and operating permits for oil and natural gas pipelines and witness pressure tests conducted to ensure that pipelines meet operating standards;
- prepare for publication, pertinent engineering, development and production data for oil and natural gas pools, including monthly demand for Saskatchewan crude oil;
- provide technical expertise and assistance to the Management Committee of the Canada-Saskatchewan Heavy Oil Agreement;
- provide technical assistance to other branches and divisions in the department;
- monitor crude oil markets and assess any problems.

Crude Oil Reserves

Saskatchewan's initial established crude oil reserves were increased by 4.0 million cubic metres (25.1 million barrels) in 1981. This increase is attributed to revisions to previous estimates and drilling, primarily in the Lloydminster and Kindersley heavy oil areas. The production of 7.4 million cubic metres (46.5 million barrels) in 1981 resulted in a decrease to the remaining reserves to 100.6 million cubic metres (633 million barrels). The production from existing pools is projected to decline by nine per cent per year. This decline will be arrested by additional drilling and implementation of enhanced oil recovery projects.

The department estimates that the potential enhanced oil recovery reserves are 667 million cubic metres (4,200 million barrels) with 86 per cent of these reserves classified as heavy oil. These potential reserves are an indication of what can be achieved assuming the enhanced oil recovery techniques are successful. Considerable technical risk exists today necessitating further research and experimentation.

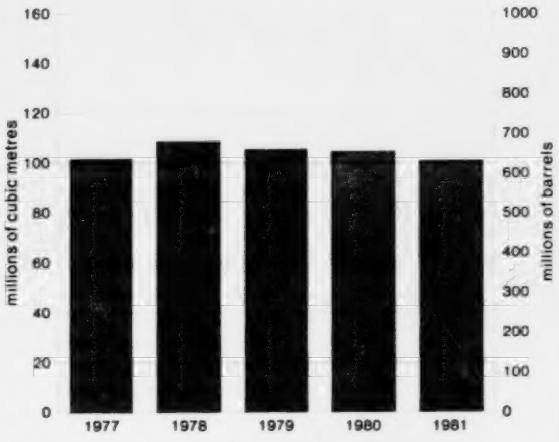


Figure 14 — Remaining Oil Reserves

Natural Gas Reserves

Saskatchewan's initial established gas reserves were increased by 3.0 billion cubic metres (107 billion cubic feet) in 1981. Production for sale during 1981 was only 1.2 billion cubic metres (43 billion cubic feet) resulting in an increase to the remaining established gas reserves to 40.2 billion cubic metres (1,427 billion cubic feet).

The department estimates that there are an additional 34 billion cubic metres (1,206 billion cubic feet) of gas reserves which are not yet classified as established reserves because of the uncertainty associated with their existence. Additional exploration and development is required for better evaluation.

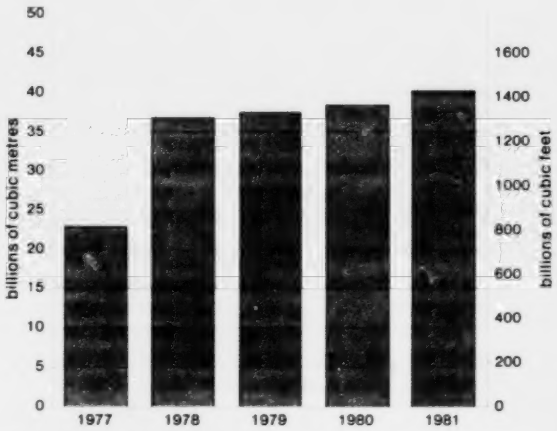


Figure 15 — Remaining Gas Reserves

Economic and Fiscal Analysis Division

The Economic and Fiscal Analysis Divison is responsible for the evaluation, design and implementation of royalty, tax and incentive systems pertaining to Saskatchewan oil and gas exploration, development and production. Government revenue sharing and development policies are translated into tangible forms through the economic rent and incentive structures developed by the department. The division is divided into two sections: fiscal analysis and incentive administration.

Fiscal Analysis

This section is responsible for the analysis and design of the royalty and tax structures applicable to oil and gas production as well as general economic evaluations. Adjustments to royalty and tax levels are accomplished through amendments to **The Petroleum and Natural Gas Regulations, 1969** and **The Oil Well Income Tax Regulations, 1981.**

Responsibilities of the section are to:

- evaluate economics of crude oil and natural gas exploration, development and production;
- analyse royalty and tax structure with respect to their impact on production economics;
- develop royalty and tax incentives to encourage certain kinds of exploration, development and production;
- design royalty and tax structures and necessary regulations;
- monitor and forecast Crown revenues;
- monitor and forecast industry exploration, development and production expenditures in the province; and
- prepare submissions on future crude oil and natural gas supplies.

The highlight of the year was undoubtedly the signing of the energy agreements between Ottawa and the producing provinces in September and October. Considerable time was devoted to analysing the Canada-Alberta agreement and its impact on Saskatchewan. Because of the differences which exist between Alberta and Saskatchewan (lower productivity and higher proportion of heavy oil), modifications to the Alberta agreement were sought for Saskatchewan. A great deal of the analytical work leading up to the signing of the Saskatchewan agreement was performed by this section.

Major changes to the province's royalty and tax levels were made as a result of the agreement. The severely eroded cash flow position of industry was significantly improved as the October and January crude oil price increases were virtually passed through to the producers without any provincial royalty or tax charges.

Considerable progress was made in the province's commitment to Enhanced Oil Recovery (EOR) as outlined in the October agreement. A new cost sensitive royalty/tax structure was developed for EOR and presented to industry for discussion. The proposal was also presented to Ottawa and discussions held on the manner and form of their commitment to EOR. A specific EOR royalty/tax structure was not implemented before the end of the fiscal year.

Work commenced on the development of a new and simplified taxing statute for freehold oil production. Replacement of the complicated Oil Well Income Tax became possible as a result of the proposed amendment to the Constitution of Canada. Section 92A of the **Constitution Act, 1867** provides greatly expanded provincial taxation powers with respect to natural resources. The provinces are now to be granted indirect taxation powers with respect to the primary production of their natural resources.

Incentive Administration Section

The main responsibilities of this section are the development, analysis and administration of the incentive programs under **The Oil and Gas Incentive Regulations, 1978.** The section is responsible for the administration of the Approved Expenditure Grant Program and the Certified Exploratory Well Program offered under the incentive regulations. A third program was added in 1981, to assist the ailing oilfield service and supply industry. The temporary assistance program was known as the Well Servicing Assistance Program.

Approved Expenditure Grant Program

Most expenditures related to research, exploration and development of the province's oil and natural gas resources qualify for approved expenditure credits. These credits are recovered by the participants based on their oil production at $5.03 per cubic metre. During the fiscal year 1877 applications were processed and $53.3 million paid as incentive grants to the oil producers.

Certified Exploratory Well Program

This program provides financial assistance to those drilling certain exploratory wells. The amount of financial assistance is determined using a depth related formula rather than actual expenditures. Although the amount of assistance available is less than that available under the Approved Expenditure Grant Program, it is not necessary for a participant to have production in order to obtain financial assistance.

During the fiscal year 138 applications were reviewed and certified exploratory status granted to 81 wells. As in the past, this accounted for about 10 per cent of the wells drilled. $3.1 million in financial assistance was authorized during the year with payments of $2.7 million granted.

Well Servicing Assistance Program

The introduction of the federal National Energy Program (NEP) in October 1980 and the ensuing federal-provincial struggles resulted in a drastic cutback in drilling and normal repair and maintenance work. The province was approached by the local service and supply industry for assistance to prevent the loss of skilled personnel and specialized equipment. The province responded by introducing a temporary assistance program which indirectly helped the service and supply sector by encouraging operators to repair and maintain their producing wells. The duration of the program was May to October 1981.

During the fiscal year 6,123 applications for financial assistance were received and processed with grants amounting to $4.2 million paid to the various operators.

Other responsibilities of the section include:

- monitoring and forecasting drilling and seismic expenditures;
- monitoring and forecasting operating costs associated with the production of crude oil; and
- forecasting expenditure requirements for operation of the incentive programs.

Petroleum Development Division

This division is responsible for ensuring that the field operations of the province's oil and gas industry meet acceptable technical and environmental protection standards as established under The Oil and Gas Conservation Act. The division is supervised from Regina with field offices strategically located at Estevan, Swift Current, Kindersley and Lloydminster.

The main responsibilities of Regina staff are to:

- direct field office operations;
- approve applications for drilling licences and licences to operate drilling and service rigs;
- maintain records and control of well deposits made to guarantee proper drilling, completion and abandonment of wells;
- process and approve well ownership and name changes;
- advise of offset drilling commitments on Crown land;
- process weekly drilling reports and compile statistical data related to drilling activity;

The main responsibilities of field office staff are to:

- collect and compile drilling, completion and reservoir data;
- enforce all regulations, orders and policies pertaining to pollution control in the oil industry;
- check standards, procedures and equipment used by industry in the drilling, producing and abandonment of wells;
- witness production tests;
- perform on site inspections of all wells and facilities;
- investigate and assist in resolving landowner problems associated with the use of land for exploration and production; and
- investigate, report and ensure that industry act promptly and efficiently in handling oil and salt water spills.

During the past fiscal year there were 1,365 well ownership changes and 222 well name changes. Assignment agreements were registered and recorded in the appropriate department records for each ownership change.

The oil industry in 1981 produced an average of 20 200 cubic metres (127,000 barrels) of crude oil and 71 000 cubic metres (447,000 barrels) of salt water per day. This tremendous volume of fluid handled each day through a complicated network of wells, pipelines and trucking operations resulted in 420 reported oil and salt water spills. Total volume spilled was about 10 000 cubic metres (63,000 barrels) of which about 7 000 cubic metres (44,000 barrels) was recovered.

Petroleum Statistics Division

The Petroleum Statistics Division is responsible for providing accurate statistics on all oil, gas and water production and disposition from each well in Saskatchewan as well as evaluating the wellhead price of all oil and gas. The division is also responsible for administering a crude oil pricing program funded by the federal government and a program for sharing the export tax revenue on crude oil exports from the province between the Governments of Canada and Saskatchewan. Accurate and timely statistics are vital for sound resource management and policy decisions and for conducting detailed reservoir engineering studies, evaluation of Crown lands under disposition, and revenue auditing functions.

The major responsibilities of the division are to:

- collect, validate, process, store and disseminate data related to production and disposition of crude oil, natural gas and water in the province;
- manage a system of computer programs which record and validate production and disposition data submitted by operators;
- implement a program to audit production and disposition data against data contained in returns submitted by purchasers, transporters, and receivers of the product of production;
- validate production and related data used by operators in calculating the amount of royalty and tax revenue accruing to the province on crude oil and natural gas production;
- conduct detailed analysis of wellhead prices of Saskatchewan crude oil and delivered price to specific markets;
- analyse, develop and administer a program for sharing the export charge revenue on crude oil exports from the province between the Governments of Canada and Saskatchewan as provided for in the National Energy Program;
- design and implement the New Oil Reference Price (NORP) program funded by the Government of Canada to provide world prices for conventional new oil produced in Saskatchewan beginning January 1, 1982;
- prepare for publication, The Monthly Oil and Gas Report, The Drilling Activity Report, and the Mineral Statistics Yearbook; and
- handle internal and external requests for crude oil, natural gas and water statistics in various formats.

The effort started the previous fiscal year in an attempt to overcome a large backlog of unprocessed production

and disposition reports was continued during the current year. The production and disposition system which record, validate and store data submitted by more than 170 operators averaging in excess of 5,000 individual reports each month on over 13,500 active oil, gas and service wells was current for the first time in many years. Every effort is being made to maintain the system on a current basis. This included a joint effort (Petroleum Statistics and Mineral Revenue) in the preparation and presentation of a production and revenue reporting seminar to oil companies in Calgary that are experiencing difficulties in filing complete and accurate production and revenue reports.

The price of crude oil received at the wellhead is one of several variables in a formula used to calculate royalty and tax revenues on crude oil production. A program, initiated the previous year, was continued in order to monitor more precisely the determination of the price of crude oil at the wellhead — the posted price at a field terminal less reasonable allowance for transportation from wellhead to the point of sale. This is particularly important in view of the rapid escalation of transportation charges compared to the more gradual and regulated increases in the wellhead price of crude oil.

With the signing of the energy agreement, the province agreed to administer the New Oil Reference Price (NORP) program funded by the federal government to provide world prices for conventional new oil produced from eligible wells in Saskatchewan beginning January 1, 1982. A computer system was designed and implemented to facilitate the administration of the NORP program. During the first three months of the program immediately prior to fiscal year end over 400 applications were reviewed and 392 wells received approval for NORP supplement payments averaging $3.5 million monthly.

The division continues the work on the determination of Saskatchewan's share of the oil export charge revenue as provided for in the National Energy Program announced in late 1980. Near fiscal year end, a payment of $273 million was received representing Saskatchewan's share of the export charge revenue for the period November 1, 1980 to January 31, 1982. Due to the soft world crude oil market which saw a moderate decline in the world price of oil and the scheduled increases of the domestic price of oil, Saskatchewan's share of future export tax revenue is expected to decline significantly from the previous average level of $18.2 million per month.

Office of Energy Conservation

The Office of Energy Conservation (OEC) is responsible for:

- co-ordination of government energy conservation activities;
- development of information and education programs on energy conservation;
- management of federal-provincial conservation programs;
- the development of policy and programs.

OEC is organized into three divisions: development and evaluation, marketing and promotions and program operations.

Development and Evaluation

The Development and Evaluation Division is responsible for initiating and co-ordinating research, development and demonstration efforts in energy conservation and for evaluating the effectiveness of energy conservation programs. Two incentive programs are co-ordinated by this section.

Warm Up Saskatchewan

Warm Up Saskatchewan provides interest free loans between $100 and $1,000 to homeowners for retrofitting existing houses. Loans are charged on the customer's SPC bill and can be repaid over 36 months. The program has been in operation since July 1978.

During the fiscal year 1981-82 the Office of Energy Conservation contracted with the Saskatchewan Power Corporation to administer this program. An evaluation of the program carried out during this fiscal year indicated that the average Warm Up Saskatchewan client reduced his energy consumption by more than 20 per cent.

In the year under review the number of approved applications rose to 4,766 a 10 per cent increase over the previous year (Figure 16). As of March 31, 1982 the program had issued a total of 12,135 loans valued at $7.8 million. The average loan has increased from $539 in 1978 to $697 in 1982.

Home Energy Loan Program

The Home Energy Loan Program (HELP) provides a $3,000 interest free loan, repayable over 10 years to the first owner-occupier of a qualifying house. In order to qualify a house must be built to the energy efficiency standards developed for the program. These standards are designed to reduce the space heating requirements of the house by approximately 50 to 75 per cent over that of a similar home built to conventional standards.

The Office of Energy Conservation is responsible for planning, development and evaluation of this program. Saskatchewan Housing Corporation assumes responsibility for inspection, certification and technical advisory services to the building industry. The Saskatchewan Power Corporation is contracted by OEC to provide loan administration and program marketing.

To March 31, 1982, 400 applications had been received. This represented 20 per cent of single family housing starts and eight per cent of all housing starts during this period. At year end, 69 houses had been certified and 44 loans had been issued. The apparent "gap" between applications and certifications can be explained by the length of time required for construction. Application must be made before construction starts and certification cannot be issued until construction is complete. This elapsed time period is currently averaging approximately six and a half months.

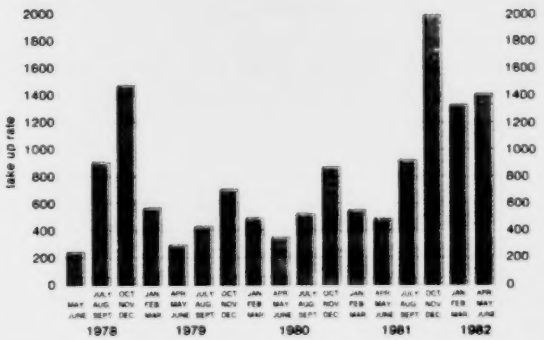


Figure 16 — Warm Up Saskatchewan Approved Applications

Marketing and Promotions

The Marketing and Promotions Division is responsible for developing and operating a number of public awareness, education and extension programs.

During the past year requests for information and publications on energy conservation continued to be handled by OEC information staff. Information staff distributed approximately 124,763 pieces of information in response to approximately 5,608 requests for information. The majority of these inquiries were concerned with energy efficient construction techniques.

Information Centres

The Saskatoon Energy Conservation Information Centre (ECIC) entered its third year of operation during the year under review. In fiscal year 1981-82 Saskatoon ECIC responded to 4,081 public requests for information, sponsored 16 workshops and seminars and set-up three displays on energy conservation. With funding from the federal department of Energy, Mines and Resources, ECIC was able to expand its progam to provide Saskatoon residents with free on-site home audits to help them better utilize home insulation grants and loans. During the year, staff completed 283 audits.

In May an evaluation of the centre's activities was completed by the Extension Division of the University of Saskatchewan. This evaluation praised the performance of the centre to date and recommended areas of further expansion.

During the year under review a second community information centre in Regina was initiated by OEC. Co-sponsored by the Regina Public Library, the Regina Energy Conservation Information Centre was established along similiar lines as the Saskatoon ECIC. In its first year of operation the Regina Energy Conservation Information Centre responded to 900 requests for information, sponsored 10 seminars and set-up three displays on energy conservation. In January 1982 the Regina ECIC also received funding from the federal government to provide free home energy audits to Regina residents. From January to year end, 40 home audits were completed.

Mobile Information Unit

During the 1981-82 year, the Mobile Information Unit continued to tour the province. The staff gave 162 classroom presentations, participated in 36 workshops, addressed seven community groups and set up 12 displays at exhibitions and trade fairs.

In addition staff developed an instructional package of curricular support materials for junior high school science classes and developed four computer programs as educational aids.

Conservahome Demonstration Project

In April 1981, the six Conservahomes in Moose Jaw, Prince Albert, Swift Current, Maidstone, Weyburn and Yorkton were opened for public viewing. These houses had been retrofitted to improve their energy efficiency by 50 to 90 per cent.

OEC was responsible for co-ordinating the public demonstration phase of the program which began in April and ended in October, and which resulted in a number of displays, publications and a film on options for energy conserving houses. As part of the program, OEC also sponsored 37 seminars on energy efficient housing in 18 communities.

Conservacheck '81

During the summer of 1981 OEC and Highway Traffic Board operated Conservacheck-Safety Lane 1981 as a joint project. With OEC's support, the annually established Safety-Lane added an engine efficiency component to the lane. Approximately 7,000 vehicles were checked during the 39 days the lane was in operation and 25 communities were visited by the lane. Forty-two per cent of the vehicles checked failed the engine efficiency test. Along with the opportunity to have a free energy efficiency check of vehicles, OEC also provided literature on driving habits and vehicle maintenance to those who attended Conservacheck.

1982 World's Fair

During the year under review, the Office of Energy Conservation was invited by the federal government to participate in the Canadian pavilion at the 1982 World's Fair in Knoxville, Tennessee.

Publications

Conservacheck — pamphlet

En-Counter — Internal Program Employee newsletter

Planning Your Home Retrofit Project — booklet

Saskatchewan Conservation Energy Seminars — booklet

Saskatchewan Conservation House Final Report — booklet

Films

"Saskatchewan Conservahome Program — Energy Saving Options for Existing Housing" — is the second in a series of two films produced by OEC on energy efficient housing. The first was released in the last fiscal year and dealt with building a new energy efficient house. The second film discussed the process of making older homes energy efficient with reference to the six houses that were retrofitted through the Conservahome Program. The film was made available for public viewing in October. Both films are distributed by OEC and SaskMedia.

Program Operations

The Program Operations Division is responsible for managing the following programs:

Audit Programs

The Energy Audit Program completed its third year of operation in 1981-82. This federal-provincial program provides free on-site energy analysis for industry, commercial enterprises, institutions and livestock operations throughout the province.

During the FY81-82, a new agreement was signed with the federal government. The Canada-Saskatchewan agreement on Industrial Energy Conservation provides for an expanded program, with the following components: an additional audit vehicle and engineering team; a series of energy management seminars; and a financial assistance program for consulting services.

In 1981-82, the energy audit team completed 182 audits. During the year the audit team identified total savings of $2,801,950 annually. This represented an average of $15,395 per client.

During the year under review, evaluation was carried out to determine the effectiveness of this program during 1978-80. One hundred and fifty-two clients were surveyed. The survey showed over 84 per cent of all clients had implemented one or more of the recommendations for an energy savings equivalent to 139 million kWh of electricity per year. This saving was valued at $1,399,000 per year based on energy prices in effect in January, 1981.

The audit program has proven to be a highly cost effective vehicle for promoting energy conservation in Saskatchewan.

Internal Energy Conservation Program

In April 1981, the government announced an Internal Energy Conservation Program. This program is aimed at reducing the government's energy use by 10 per cent in FY81-82 over FY80-81, and holding consumption at the reduced level for five years.

The Office of Energy Conservation is responsible for monitoring the progress of the program, determining requirements for education, employee awareness, technical and budgetary projects, initiating projects and co-ordinating agency efforts to ensure projects are completed.

During 1980-81, OEC initiated the internal program with participation by 39 departments, agencies and Crown corporations. At that time OEC set up an energy use recording system. In the fiscal year under review OEC analysed the data of the government's energy consumption. The government consumed approximately 15M gigajoules of energy in 1980-81 (Figure 17). Over 70 per cent of this energy use was in the form of natural gas. In financial terms, this meant the government spent $60 million a year on energy. Therefore, the targeted 10 per cent reduction represents a $6 million annual saving.

Also during 1981-82, OEC distributed guidelines for conserving energy in government buildings and in the area of transportation. OEC co-ordinated eight building operators seminars, one transportation workshop and 13 employee awareness seminars. OEC staff produced and distributed informational material in the form of displays, slide shows, posters, brochures, stickers, and a quarterly newsletter to encourage program support by all government employees.

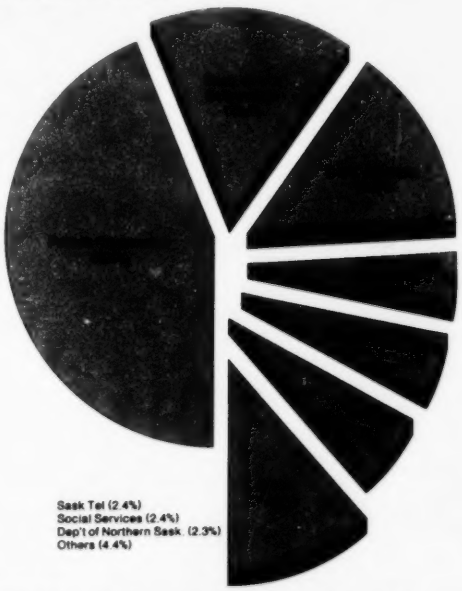


Figure 17 — Saskatchewan Government Consumption of Energy